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Randomised Field Trial Methodology for Evaluating Adoption Rates in Kenyan Water Treatment Systems

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ABSTRACT

Background: Evaluating the real-world adoption of engineered water treatment systems in resource-limited settings remains methodologically challenging. Prevailing approaches often rely on self-reported data or short-term surveys, which can overestimate sustained use and provide limited causal insight into factors influencing adoption.

Purpose and objectives: This article presents a robust methodological framework for conducting randomised field trials to measure longitudinal adoption rates of household water treatment technologies. The objective is to provide a replicable protocol for generating high-quality evidence on technology uptake and its determinants.

Keywords: *Randomised controlled trial, Field trial methodology, Technology adoption, Water treatment systems, Sub-Saharan Africa*

Article Highlights

- Presents a cluster-randomised controlled trial design for measuring longitudinal adoption.
- Employs unannounced direct observation and sensor-based monitoring over 12 months.
- Uses multilevel logistic regression to analyse determinants of correct use.
- Designed to detect a 15-percentage-point difference in correct use with 80% power.

Methodological Core

The protocol centres on objective measurement of adoption via direct observation and sensors, analysed through a multilevel model accounting for household and cluster-level effects.

This article presents a methodological framework, not empirical trial results.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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